

Claims

1. A method for joining together two or more superimposed generally planar sheets by setting a fastener in engagement with the sheets at a predetermined location, wherein the superimposed planar sheets are placed in a fastener setting and sheet deforming assembly, and the assembly is operated to set a fastener into the sheets and to deform the sheets out of their planes around the predetermined location.
2. A method according to claim 1, wherein the sheets are deformed before the fastener is set.
3. A method according to claim 2, wherein the sheets are clamped together before the fastener is set.
4. A method according to claim 3, wherein the sheets are clamped together until the fastener has been set.
5. A method according to claim 3, wherein the sheets are unclamped before the fastener is set.
6. A method according to claim 3, 4 or 5 wherein the sheets are clamped together between a clamping member and a die shaped such that the sheets are deformed between the clamping member and the die.

7. A method according to claim 2, 3, 4, 5 or 6 wherein the sheets are supported around the predetermined location by a support surface defining a recess into which the sheets are deformed by a head portion of the fastener.
8. A method according to claim 1, wherein the sheets are deformed after the fastener is set.
9. A method according to claim 8, wherein the sheets to be deformed are clamped between a clamping member and a die shaped such that the sheets are deformed between the clamping member and the die.
10. A method according to claim 1, wherein the sheets are deformed and the fastener is set simultaneously.
11. A method according to claim 10, wherein the sheets are deformed by supporting the sheets on a die defining a recess extending around the predetermined location, a head portion of the fastener driving the sheets into the recess when the fastener is set.
12. A method according to claim 11, wherein the sheets are clamped against the surface of the die outside the said recess during the setting of the fastener.
13. A method according to claim 11 or 12, wherein the fastener head increases in thickness towards its periphery so as to define a convex surface facing the recess formed in the die.

14. An apparatus for joining together two or more superimposed generally planar sheets by setting a fastener in engagement with the sheets at a predetermined location, the apparatus comprising an assembly which is operative to receive superimposed planar sheets and to set a fastener in engagement with the sheets and to deform all the sheets outside the predetermined location out of their planes either before, during or after fastener setting.
15. A rivet for use in accordance with the method of claim 1, comprising a head the thickness of which increases continually in the radially outwards direction to define a convex surface beneath the head.
16. A method for joining two or more sheet materials with a fastener, wherein the sheet materials are deformed by abutment with a die surface to form an annular deformation engaged between a head and a free end of a stem or shank of the fastener.